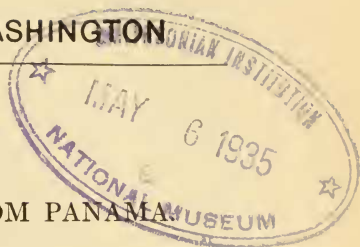


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON



TEN NEW THYSANOPTERA FROM PANAMA

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The types of the new species described below are in the author's collection.

Tæniothrips silvestris, sp. nov.

(Pl. IV, figs. 1, 2.)

Female (macropterous).—Length about 1.3 mm. (distended, about 1.6 mm.). Color brown, with bright vermilion internal pigmentation which is more abundant in thorax than elsewhere, head somewhat paler between eyes, abdomen distinguishably darker than pterothorax; legs with all coxæ brown and all tarsi yellow; fore femora yellow at base and heavily overlain with brown on outer surface, the apex and inner surface yellowish; fore tibiæ pale yellowish at base and apex, intermediate portion shaded with brown; middle and hind femora yellow at base, brown beyond, the middle pair more or less yellowish apically; middle and hind tibiæ yellow in narrow basal portion, brown beyond, shading to yellow at apex; fore wings uniform dark brown throughout, save for the usual minute pale spot behind anterior vein and just beyond the basal group of setæ; antennæ dark brown, with basal portion of pedicel of III and narrowed distal portions of III and IV yellow, III-V each with a pale subbasal ring beyond pedicel; setæ on body and wings dark brown; ocellar pigmentation red.

Head (Pl. IV, fig. 1) just longer than wide, almost as broad across eyes as across the collar-like thickening at basal third of cheeks, the cheeks slightly arched; vertex somewhat excavated in front of median ocellus, this region and occiput with distinct anastomosing striæ; interocellar setæ very long (47 μ), situated well within the ocellar triangle; one pair of small setæ in front of median ocellus, a larger pair near inner margin of eyes and laterad of median ocellus, an exceedingly minute pair close to and behind posterior ocelli, three pairs of larger postocular setæ, and two pairs of genal setæ. *Eyes* about 0.6 as long as head and nearly equal in width to their interval. *Ocelli* subequal in size, 18 μ in diameter, the posterior pair 18 μ apart and about 15 μ from median ocellus. *Antennæ* about 2.2 times as long as head, their structure well shown in Pl. IV, fig. 2; segment

IV longer than III and much longer than VI, both III and IV with distal portion narrowed and stalk-like; VIII about four times as long as wide and about one-third the length of III.

Prothorax (Pl. IV, fig. 1) 0.9 as long as head and about 1.4 times as wide as long; pronotum distinctly cross-striate with pale, anastomosing lines and with a number of moderately long, slender, dark setæ; setæ at posterior angles dark brown, inner 73 μ , outer 67 μ ; posterior margin with 7-9 smaller setæ between the inner pair at angles, the mediad pair stronger and about 28 μ . *Legs* normal. *Wings* of fore pair about 14 times as long as width at middle; costal margin with about 30 setæ, anterior vein with 4 + 6 (rarely 5, 7, or 8) in basal half and 2 near extreme tip, posterior vein with 15-17 nearly equidistant ones.

Abdomen of normal form; terga smooth excepting at sides, where the faint striæ are rather widely spaced, VIII with comb missing in median third or less, X not divided above; setæ on IX subequal and about 117 μ , on X subequal and about 130 μ .

Measurements of paratype (♀), in mm.: Length about 1.3 (distended, 1.55); head, length 0.151, width across eyes 0.145, across cheeks 0.146, at posterior margin of eyes 0.137, at base 0.137; eyes, length 0.092, width 0.048, interval 0.051; prothorax, length 0.136, width 0.187; pterothorax, width 0.251; fore wings, length 0.778, width at middle 0.053; abdomen, width 0.301.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ)	32	42	60	67	42	58	10	21
Width (μ)	33	27	25	23	16	17	7	5
Total length of antenna 0.332 mm.								

Male (macropterous).—Length about 0.95 mm. (distended, 1.20 mm.). Color identical with that of female. Structure very similar, excepting in those details affected by the smaller size, as, for example, the number of setæ on the wing-veins, which is less; tergum VIII with comb complete though weakened medially; tergum IX without large dorsal setæ, its anterior pair of lateral setæ about 90 μ ; segment X with the lateral setæ 117 μ and the pair below and posterior to them 107 μ ; sterna III-VII each with two transverse rows of small pale areas, those in the anterior row on each segment larger, sometimes transversely elliptical, and frequently coalescing here and there to form still larger transverse areas; sternum IV of allotype with 9 circular areas in the posterior row and with three circular areas and two elliptical submedian ones in the anterior row.

Measurements of allotype (♂), in mm.: Length about 0.95 mm.; head, length 0.120, width across eyes 0.122, across cheeks 0.120, at posterior margin of eyes 0.113, at base 0.112; eyes, length 0.073, width 0.041, interval 0.041; interocellar setæ 0.040; prothorax, length 0.106, width 0.158, inner setæ at posterior angles 0.060, outer setæ 0.053, median setæ on posterior margin 0.030; pterothorax, width 0.200; fore wings, length 0.620, width at middle 0.043; abdomen, width 0.202.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	23	34	48	55	37	50	9	17
Width (μ)	27	24	20	18	14	15	7	5
Total length of antenna 0.273.								

Described from 27 females and 5 males, all from Barro Colorado Island, C. Z., Panama, July 31–October, 1933, Silvestre Aviles and J. D. H., in flowers of *Dichorisandra hexandra* (Aubl.) Standl. and *Xiphidium caeruleum* Aubl. (both determined by Dr. Paul C. Standley) [Hood Nos. 1027, 1030, 1045, and 1078].

This is one of the few Panamanian Thripidae to be found in deep forests, and in calling it *silvestris* I have in mind, too, the name of Silvestre Aviles, a native Panamanian whose intimate knowledge of the tropical jungle made him a most valuable collecting companion.

The species is allied to the African *funtumiae* and *ventralis*, and in the New World finds its closest relatives in *funestus*, described from Texas, and *lagoenacollus*, described from Brazil. From the former it differs most conspicuously in having the pronotum distinctly striated and the fourth antennal segment much longer than the sixth. From the latter, known to me only from the original description, it would appear to be readily separable in the male sex by the long wings and the different disposition of the pale areas on the abdominal sterna, those of *lagoenacollus* being "arranged in an irregular series of 6–7 across each sternite," while the present species has about twice as many, arranged in two distinct rows. Although Moulton states that the modified sterna are II–VI, this is clearly an error because III–VII are the specialized ones in the other species belonging to the same group.

***Adraneothrips bilineatus*, sp. nov.**

Female (macropterous).—Length about 1.06 mm. (partially distended, 1.19 mm.). Color pale yellow, with sides and front of head, sides of pro-, meso-, and meta-thorax, and sides of abdominal segments I, III, and IV margined narrowly with dark brown and underlain with bright crimson pigmentation; similar pigmentation at sides of abdominal segments VIII and IX and along posterior margin of dorsal surface of eyes; ocellar pigmentation vermilion red; pronotum with a gray median cloud involving posterior portion, the metanotum at middle and posterior portion of abdominal tergum IX similarly clouded; tube gray-brown, paler in apical portion; all coxae and tarsi, and the hind tibiae, uniform pale yellow; femora yellow, the fore pair clouded with gray, especially along inner and outer surfaces, middle and hind femora largely gray-brown, shading to yellow in about basal third and at extreme apex; fore and middle tibiae yellow, lightly shaded with gray; fore wings yellowish or grayish at base (including scale) and in distal two-fifths, the intervening portion somewhat darker and with a median gray streak which is broadened basally; antennae with segments I, II, IV, V, VII and VIII largely gray-brown, the intervening ones much paler, II with pedicel and sides darkened, IV and V with basal

fourth (excepting the dark pedicel of V) pale yellowish white, III yellowish white, with a brown cloud crossing the narrow portion beyond pedicel and extending along inner surface, its narrower distal portion lightly clouded, VI with pedicel dark gray and concolorous with apex of V, remainder nearly white basally, shading to gray in distal half.

Head long, its length about 1.28 times its greatest width, which is across cheeks, the latter rounded to eyes and roundly converging posteriorly; vertex conically produced between eyes, bearing the overhanging and forwardly directed median ocellus at its extremity; dorsum of head smooth, the darkly colored cheeks with short transverse striæ which give them a minutely serrated appearance; postocular setæ pale yellow, dilated at apex, $32\ \mu$ long and $57\ \mu$ apart; other cephalic setæ small, the dorsal ones very slender and pale, the lateral ones shorter, darker, and stouter, one more noticeable pair on profile of cheeks just behind eyes. *Eyes* about 0.4 as long as head, much shorter than their distance from posterior margin of head, their width slightly less than their interval, *on ventral surface of head narrowed posteriorly and prolonged somewhat beyond their dorsal margin.* *Ocelli* obscured by the dense vermilion pigmentation, but clearly anterior in position; median ocellus with its front margin just in advance of that of eyes. *Antennæ* of normal form and structure, segment III with two sense-cones on outer surface. *Mouth-cone* broadly rounded, its tip scarcely attaining posterior margin of prosternum.

Prothorax less than one-half as long as head and (inclusive of coxæ) about 2.44 times as wide as long, its surface perfectly smooth excepting a few anastomosing lines along posterior margin; all usual major setæ present and dilated at apex, the three lateral pairs pale brownish and darker than the others, epimerals about $33\ \mu$, the others shorter, subequal, and about $27\ \mu$. *Pterothorax* somewhat narrower than prothorax across coxæ; metanotum with large, distinct, polygonal reticles in the area of the gray cloud. *Legs* normal; fore tarsi not toothed. *Wings* weak and slender, sparsely fringed, the fore pair with three accessory hairs; subbasal setæ dilated at apex (the distal one less distinctly so) and measuring about 26, 31, and $41\ \mu$, respectively.

Abdomen narrower than pterothorax, of normal structure; posterior pair of wing-retaining setæ on segments IV–VI larger than the others, the posterior pair on III and IV dark brown in color; I, II, and VII with one pair of dilated, dorso-lateral setæ, III–VI and VIII with two such pairs, the outer pair on VII nearly or quite pointed; homologous pairs on IX nearly pointed and $62\text{--}65\ \mu$ long; other abdominal setæ pointed; median sclerite of tergum I with two sensory pores on posterior margin; tube about one-half as long as head, twice as long as basal width, and twice as broad at base as at apex, its terminal setæ brownish yellow and about $60\ \mu$ long.

Measurements of holotype (♀), in mm.: Length about 1.06 (partially distended, 1.19); head, length 0.188, greatest width (across cheeks) 0.147, width across eyes 0.133, least width (at base) 0.124; eyes (measurements approximate because of neighboring pigmentation), length 0.074, width 0.043, interval 0.050; prothorax, length 0.090, width (inclusive of coxæ)

0.220; pterothorax, width 0.204; abdomen, width 0.193; tube, length 0.094, width at base 0.048, width at apex 0.023.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	25	40	50	52	47	44	38	27
Width (μ):	32	25	25	24	21	19	17	9
Total length of antenna 0.323 mm.								

Described from one female taken by the author on a dead palm leaf, Barro Colorado Island, C. Z., Panama, June 26, 1933 [Hood No. 948].

Though the coloration of this species is unique and distinctive, it is nevertheless readily separable from its congeners on the basis of structural characters. *A. huachuca* is the only other member of the genus in which the eyes are prolonged posteriorly on the ventral surface of the head and which at the same time has a pair of pores on the posterior margin of the first abdominal tergum; but, aside from the very different coloration, *huachuca* has the head very much shorter and the antennal segments differently proportioned.

Adraneothrips diligens, sp. nov.

Female (macropterous).—Length about 1.1 mm. (distended, about 1.4 mm.). Bicolourous; head, thorax, and abdominal segments I, IV, and VIII–X brown, the head and sides of pterothorax darkest, the tube paler in distal half, all of these brown portions underlain with more or less crimson pigmentation, this pigmentation nearly continuous in pterothorax and first abdominal segment, confined in prothorax largely to anterior and lateral margins, restricted in head largely to the sides and the region just posterior to ocelli, limited in abdomen to sides of the darker segments, lacking from tube; abdominal segments II and III pale yellow, II often shaded posteriorly, V brown at sides and anteriorly, yellowish posteriorly, with more or less crimson pigmentation laterally, VI and VII bright dark yellow, VII with a brown cloud occupying about median third; legs with coxæ brown and remainder nearly uniform bright pale yellow, the middle femora just distinguishably shaded with gray; wings of fore pair with a gray cloud in second fifth and a dark vein extending to near middle of wing, the basal portion yellowish, distal portion nearly clear; antennæ with segments I, II, VII, and VIII dark gray-brown, II blackish brown at sides and paler along middle, III pale yellowish white, shading to gray in narrowed distal portion, IV–VI yellowish white in basal half, two-fifths, and one-third, respectively (excepting the more or less darkened pedicels), remainder concolorous with VII and VIII; ocellar pigmentation crimson.

Head about 1.27 times as long as greatest width, which is across cheeks, these rounding to eyes, straight and converging posteriorly, with faint anastomosing lines which produce a faint serration, dorsum of head smooth; vertex conical; postocular setæ 38 μ , brown, dilated at apex, 68 μ apart; other cephalic setæ small. *Eyes* about 0.44 as long as head and nearly as wide as their interval, on ventral surface of head narrowed posteriorly and prolonged slightly beyond their dorsal margin. *Ocelli* of posterior pair about

12 μ in diameter, 21 μ apart, and 17 μ from median ocellus, the latter directed forward, overhanging, and with its front margin just in advance of that of eyes. *Antennae* of normal form and structure, except that *segment III* has only one sense-cone on outer surface. *Mouth-cone* broadly rounded, its tip about attaining posterior margin of prosternum.

Prothorax less than one-half as long as head and (inclusive of coxæ) about 2.65 times as wide as long, its surface perfectly smooth, excepting posteriorly, where there are a few transverse striæ; all usual major setæ present, brown in color, and dilated at apex, the anterior marginals about 33 μ , anterior laterals 30 μ , midlaterals 33 μ , epimerals 40 μ , posterior marginals 38 μ , coxals 27 μ . *Pterothorax* somewhat narrower than prothorax. *Legs* normal; fore tarsi not toothed. *Wings* weak and slender, sparsely fringed, the fore pair with about three accessory setæ; subbasal setæ dilated at apex (the distal one less distinctly so) and measuring about 30, 36, and 57 μ , respectively.

Abdomen narrower than pterothorax, of normal structure; posterior pair of wing-retaining setæ on segment IV especially heavy and dark brown in color, homologous pairs on V and VI yellow and successively smaller, the other wing-retaining setæ weak; I and II with one pair of dilated, dorso-lateral setæ, III–VIII with two such pairs; homologous ones on IX nearly pointed, pale yellowish, and 80–83 μ long; other abdominal setæ pointed; median sclerite of tergum I with posterior margin rounded and without a pair of sensory pores; tube about 0.58 as long as head, twice as long as basal width, and twice as broad at base as at apex, its terminal setæ brownish yellow and 83 μ long.

Measurements of holotype (♀), in mm.: Length about 1.08 (distended, 1.39); head, length 0.178, greatest width (across cheeks) 0.140, width across eyes 0.134, least width (at base) 0.128; eyes, length 0.079, width 0.044, interval 0.047; prothorax, length 0.082, width (inclusive of coxæ) 0.217; pterothorax, width 0.197; abdomen, width 0.186; tube, length 0.103, width near base 0.050, at apex 0.025.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	27	38	44	47	43	42	40	27
Width (μ):	30	24	22	22	20	18	17	8
Total length of antenna 0.308 mm.								

Male (macropterous).—Length about 0.9 mm. (distended, 1.0 mm.). Color essentially as in female, except that segment VIII of the abdomen is brownish yellow, with a gray cloud at middle, and VII is abundantly pigmented with red. Fore legs not enlarged, fore tarsi unarmed. Sternum VIII with a complete, pale, transverse sensory band of minute, granular-appearing dots, this band crossing the middle of the sclerite and occupying about one-fourth of its length.

Measurements of allotype (♂), in mm.: Length about 0.89 (distended, 0.99); head, length 0.153, greatest width (across cheeks) 0.120, width across eyes 0.117, least width at base 0.105; postocular setæ, length 0.032; prothorax, length 0.068, width (inclusive of coxæ) 0.171, anterior marginal setæ 0.024, anterior lateral 0.025, midlateral 0.026, epimeral 0.033, posterior

marginal 0.024, coxal 0.028; pterothorax, width 0.160; abdomen, width 0.137; tube, length 0.080, width at base 0.043, at apex 0.021.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	22	35	40	42	40	36	36	24
Width (μ):	28	21	22	21	20	17	16	8

Total length of antenna 0.275 mm.

Described from 13 females and 4 males, all from fallen leaves and dead cut grass, Barro Colorado Island, C. Z., Panama, June 26 (*holotype* and *allotype*) to July 27, 1933, Sabra J. Hook and J. D. H. [Hood Nos. 951, 952, 959, 980, and 1014]; and Frijoles, C. Z., Panama, June 30–July 18, 1933, Sabra J. Hook, Helen H. Hood, James Zetek, and J. D. H. [Hood Nos. 965, 982, and 1001].

This is the only species of the genus with one sense-cone, instead of two, on the outer surface of the third antennal segment. From *alternatus*, to which it bears a remarkably close superficial resemblance, it may be known also by the longer head, the greater ventral extent of the eyes, the darker and more brilliant coloration of the body, the paler, yellow legs, and the less darkened wings.

***Adraneothrips albicollis*, sp. nov.**

Female (macropterous).—Length about 1.04 mm. (distended, 1.27 mm.). Bicolorous; head, pterothorax, and abdominal segments I, IV, V and VIII–X dark brown, the pterothorax narrowly pale along anterior margin and abdominal segments IV and V paler at middle, tube paler apically, the prothorax and abdominal segments II and III nearly white, and abdominal segments VI and VII yellow, the former segment lightly shaded with brown anteriorly, the latter somewhat more darkly shaded with brown posteriorly; legs pale yellowish (nearly white), the fore and middle femora and tibiae lightly shaded with brown; fore wings rather dark brown in basal two-fifths, shading to a very light brown in apical half; antennae brown and about concolorous with head in segments I, II, and IV–VIII, the base of IV perhaps a trifle paler, III nearly uniform pale grayish yellow; ocellar pigmentation maroon-red; fat-body pigmentation red, sparse, scattered along sides of pterothorax.

Head unusually long for the genus, its length about 1.39 times its greatest width, which is across cheeks, the latter rounded to eyes, almost perfectly straight and slightly converging to near base, where they are parallel for a short distance and 0.92 their greatest width; dorsum of head elevated along median line in occipital region; vertex conically produced between eyes, bearing the overhanging and forwardly-directed median ocellus at its extremity; dorsum of head smooth, cheeks with short, transverse striae which give them a minutely serrated appearance; postocular setae pale brownish, dilated at apex, 40 μ long and 78 μ apart; other cephalic setae minute, slender, and pale, two pairs on sides of vertex between median ocellus and the usual pore, one pair close to and directly behind posterior ocelli, three or four pairs about one-half as far apart as postoculars and

disposed along either side of median line, and about seven pairs on cheeks, two of these last on profile of cheeks, one of them close to eyes, the other at basal third. *Eyes* very small for the genus, only 0.27 the length of head and less than half as long as their distance from posterior margin of head, their width about equal to their interval; on ventral surface of head not narrowed posteriorly nor prolonged beyond their dorsal margin. *Ocelli* anterior in position, median ocellus with its front margin just in advance of that of eyes. *Antennæ* of normal form and structure, segment III with two sense-cones on outer surface. *Mouth-cone* broadly rounded, its tip about attaining posterior margin of prosternum.

Prothorax about 0.45 as long as head and (inclusive of coxæ) about 2.5 times as wide as long, its surface perfectly smooth excepting a few faint anastomosing lines along posterior margin; all usual major setæ present, dilated at tip, and yellow in color, the epimerals 40 μ and longest, anterior laterals and posterior marginals 37 μ , the others 31–33 μ , coxals similar in color and form, 20 μ . *Pterothorax* somewhat narrower than prothorax across coxæ; metanotum with large, indistinct, polygonal reticles in anterior portion. *Legs* normal; fore tarsi not toothed. *Wings* weak and slender, sparsely fringed, the fore pair with three accessory hairs; sub-basal setæ dilated at apex and measuring about 28, 36, and 38 μ , respectively.

Abdomen slightly narrower than pterothorax, of normal structure; posterior pair of wing-retaining setæ on segments IV and V larger than the others, the posterior pair on III–V brown in color; I, II and VII with one pair of dilated, dorso-lateral setæ, III–VI and VIII with two such pairs, the outer pair on VII nearly pointed; homologous pairs on IX nearly pointed, inner 70–77 μ , outer 82 μ ; other abdominal setæ pointed; median sclerite of tergum I narrowed posteriorly and without a pair of sensory pores on posterior margin; tube one-half as long as head, about twice as long as basal width, and twice as broad at base as at apex, its terminal setæ pale brown and about 80 μ long.

Measurements of holotype (♀), in mm.: Length about 1.04 (distended, 1.27); head, length 0.174, greatest width (across cheeks) 0.125, width across eyes 0.117, least width (at base) 0.115; eyes, length 0.047, width 0.038, interval 0.042; prothorax, length 0.078, width (inclusive of coxæ) 0.195; pterothorax, width 0.178; abdomen, width 0.175; tube, length 0.087, width at base 0.045, width at apex 0.022.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	22	35	37	41	42	42	40	28
Width (μ):	26	22	23	22	21	20	17	9
Total length of antenna 0.287.								

Described from one female taken by the author from a dead vine attached to a dead bush, Frijoles, C. Z., Panama, July 7, 1933 [Hood No. 981].

From the other species of the genus which do not have the eyes narrowed and prolonged on the ventral surface of the head, this may readily be known by the lack of sensory pores on tergum I, the long head, and the very small eyes.

Trichinothrips panamensis, sp. nov.

Female (macropterous).—Length about 1.25 mm. (distended, 1.75 mm.). Color nearly uniform dark brown, with brownish or reddish brown internal pigmentation; femora brown and concolorous with body, tibiae paler, especially at either end, tarsi brownish yellow; wings brownish, the fore pair much darker in anal area (the so-called "scale"), medially paler in basal half, and with margins of outer half somewhat darker; antennae nearly uniform brown, with apical portion of segment II and pedicel of III yellowish.

Head 1.23 times as long as greatest width across cheeks, just narrower across eyes, the cheeks gently rounded to eyes and tapering nearly evenly to base, where the width is 0.9 that across widest part of head; surface nearly smooth, with a few transverse anastomosing lines at base; vertex conically produced between eyes, bearing the median ocellus at its apex; postocular setae long ($72\ \mu$), pale, knobbed, situated close to sides of head, $130\ \mu$ apart at base, $12\ \mu$ from posterior margins of eyes; other cephalic setae small and pointed, comprising a pair close to sides of median ocellus, a pair at edge of eyes just in front of posterior ocelli, two pairs along inner margins of eyes behind posterior ocelli, an occipital pair behind postoculars and $76\ \mu$ apart, and about four pairs on cheeks. *Eyes* about 0.43 as long as head, closely and finely faceted. *Ocelli* large, the median one $19\ \mu$ in diameter, directed upward as well as forward and thus not overhanging, its anterior margin distinctly in advance of that of eyes. *Antennae* stout, 1.6 times as long as head, consisting of seven segments, with a partial, crescentic, pale suture on ventral surface of VII; sense-cones long, large, and pale, disposed as follows on inner (outer) surfaces of segments: III 1 (1), IV 1 ($2+1$), V 1 ($1+1$), VI 1 ($1+1$), VII 1 dorsal, the inner sense-cone on VI longest ($47\ \mu$). *Mouth-cone* broadly rounded at apex, about attaining middle of prosternum.

Prothorax along median line of pronotum about one-half as long as head and, across coxae, about 2.5 times as wide as long, its surface nearly smooth, the usual major setae all present, pale, and knobbed, anterior marginals $61\ \mu$, anterior laterals $47\ \mu$, midlaterals $63\ \mu$, epimerals $80\ \mu$, posterior marginals $74\ \mu$, coxals $45\ \mu$; epimeron largely fused with pronotum. *Legs* rather short, fore pair moderately stout, fore tarsi unarmed. *Wings* of fore pair somewhat broader in basal portion, not narrowed at middle, with 7–9 accessory setae on posterior margin and only two subbasal setae, these pale, knobbed, and $67\text{--}71\ \mu$ long. *Mesonotum* with a pair of pale knobbed setae, $53\ \mu$ long, near lateral angles; metanotum with a pair of similar setae, these $60\ \mu$ long, $76\ \mu$ apart, and $20\ \mu$ from anterior margin.

Abdomen moderately broad and heavy, about 1.67 times as broad as prothorax across coxae, its surface nearly smooth; tergum II large, rather deeply emarginate for the reception of I; tube very short, scarcely 0.44 as long as head, somewhat broadened in basal fourth, thence with sides slightly concave, its length only 1.4 its greatest width, this about twice the width at apex; major abdominal setae all pale, mostly knobbed, the dorsal pair on tergum IX about $85\ \mu$ in length and thus subequal to tube, the terminal setae light brown, $117\ \mu$.

Measurements of holotype (♀), in mm.: Length about 1.25 (distended, 1.75); head, length 0.197, greatest width (across cheeks) 0.160, width across eyes 0.157, least width (at base) 0.143; eyes, length 0.085; prothorax, median length of pronotum 0.100, width (inclusive of coxæ 0.252); pterothorax, width 0.266; abdomen, width 0.294; abdominal tergum VIII, length 0.073, IX 0.054; tube, length 0.086, width at base 0.061, at apex 0.031.

Antennal segments:	1	2	3	4	5	6	7
Length (μ):	28	48	45	51	43	42	58
Width (μ):	35	28	30	31	27	27	23
Total length of antenna 0.315 mm.							

Described from one female, Barro Colorado Island, Canal Zone, Panama August 14, 1933, J. D. Hood, from a grass, *Axonopus compressus* (Swartz) Beauv., determined by Dr. Paul C. Standley [Hood No. 1058].

For placing this in *Trichinothrips*, the author is indebted to Dr. H. Priesner, who has studied the unique type. The genus has been known previously from two species, *T. branderi*, described from one male taken in a leaf gall in the Federated Malay States, and *T. breviceps*, described from a "very imperfect specimen," also a male, with "joints 6-8 of both antennæ and all the legs excepting the left fore-leg—missing," observed feeding upon a Psocid in Ceylon. Both of these have relatively longer tubes than the present species, and the head in both is nearly 1.3 times as wide as long; in *panamensis* the head is only 0.81 as wide as long. To permit the inclusion of the present species in *Trichinothrips*, the generic definition requires modification by changing "head transverse" to "head transverse or somewhat longer than broad."

Liothrips araliæ, sp. nov.

Female (macropterous).—Length about 2.8 mm. (partially distended, 3.14 mm.). Color blackish brown or black, with tarsi, tips of tibiæ, and distal third of tube lighter; antennæ with segments I and II blackish brown, the distal portion of II yellowish, III yellow, with darker pedicel and lightly clouded apex, IV-VIII nearly blackish brown, with apices of IV-VII and outer surface of distal half of IV somewhat paler; fore wings dark brown in anal area or "scale" and across entire base to the last subbasal seta, lightly clouded with brown beyond, with margins narrowly darker and a median brown bar extending nearly to apex.

Head 1.56-1.7 times as long as wide (averaging 1.61), usually just perceptibly broader across cheeks at posterior margin of eyes than across the latter, the cheeks almost perfectly parallel to near base, then constricted to somewhat less than 0.9 the greatest width and flared slightly outward at extreme base; vertex roundly produced, polygonally subreticulate, the forwardly-directed median ocellus overhanging and with its anterior margin nearly or just attaining the front; remainder of dorsal and lateral surfaces of head, excepting only a small area between eyes and behind ocelli, distinctly cross-striate with anastomosing lines which produce little or no serration in the silhouette of the cheeks as seen from above;

postocular setæ blackish brown, blunt or very slightly broadened at apex, in the holotype about 117 μ long, 177 μ apart, and 40 μ from posterior margin of eyes; other cephalic setæ minute. *Eyes* rounded, about one-third the length of head, not protruding, broadest behind ocelli, very slightly longer and narrower on ventral surface of head. *Ocelli* of posterior pair 35 μ in diameter and 37 μ apart, their posterior margin distinctly in advance of middle of eyes. *Antennæ* about 1.8 times as long as head, with the normal number and arrangement of sense-cones, the segments long, III 120–151 μ in length, VIII pointed at tip rather than rounded. *Mouth-cone* semicircularly rounded at apex and short, the distance between the posterior dorsal margin of head at median line and the tip of labrum only slightly more than one-half the median dorsal length of head.

Prothorax about 0.46 as long as head and (inclusive of coxæ) about 2.76 times as broad as long, its surface smooth excepting for a small patch of transverse striæ in front of each posterior marginal seta and one or two longer ones near posterior margin; all major setæ present, nearly black in color and blunt at tip, quite variable in length, in the holotype measuring as follows: anterior marginal 84 μ , anterior lateral 70 μ , midlateral 91 μ , epimeral 164 μ , posterior marginal 150 μ , coxal 81 μ ; inner seta on epimeron very minute. *Fore legs* normal. *Fore wings* normal, with about 20 accessory setæ, the three subbasal setæ nearly black, blunt, and in the holotype measuring 92, 120, and 128 μ . *Metanotum* finely and inconspicuously subreticulate, the reticles in its posterior portion elongated and disposed in more or less regular longitudinal rows.

Abdomen broadest at segments II or III, lightly subreticulate in median plate of tergum I, less distinctly sculptured in II and in successively smaller transverse areas at sides of III–VI, the lines in these latter areas asperate; setæ all dark, the one or two dorso-lateral pairs on I–IV and the inner of these on V–VIII, all blunt, the outer pair on V–VIII and the three long subequal pairs on IX very nearly or quite pointed; inner (and outer) pairs measuring as follows in holotype (μ): VI 168 (210), VII 176 (224), VIII 100 (156); on IX, inner 316, middle 336, outer 325; tube about 0.81 as long as head, three times as long as its greatest subbasal width, and nearly twice as broad near base as at apex, its terminal setæ about 266 μ .

Measurements of holotype (φ), in mm.: Length about 2.79 (partially distended, 3.14); head, length 0.396, greatest width across cheeks 0.246, across eyes 0.242, least width near base 0.214; eyes, length 0.130, width 0.078, interval 0.085; prothorax, length 0.182, width (inclusive of coxæ) 0.504; pterothorax, width 0.546; abdomen, width at segment III 0.550; tube, length 0.322, width near base 0.107, at apex 0.055.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	44 ¹	75	137	118	108	99	78	47
Width (μ):	49	37	37	47	41	37	27	16
Total length of antenna 0.706 mm.								

Male (macropterous).—Length about 2.4 mm. (fully distended, about 3 mm.). Color as in female; structure differing as follows: *Head* 1.62–1.67

¹ Dorsal length.

times as long as width across eyes and 1.67–1.73 times as long as greatest width across cheeks, the latter straight and distinctly converging posteriorly, rather abruptly constricted near base to about 0.78 the greatest width, flared slightly outward at extreme base; postocular setæ of allotype 103 μ long, 143 μ apart, and 43 μ from posterior margin of eyes. *Eyes* distinctly protruding. *Ocelli* of posterior pair about 32 μ in diameter and 28 μ apart. *Antennæ* about 1.9 times as long as head, segment III 115–127 μ . *Mouth-cone* semicircularly rounded at apex, about one-half the dorsal length of head. *Prothorax* about as in female; setæ of allotype measuring as follows: anterior marginals 62–76 μ , anterior laterals 57 μ , midlaterals 95 μ , epimerals 133 μ , posterior marginals 116 μ , coxals 67 μ ; inner seta on epimeron very minute. *Legs and wings* normal; fore wings with about 19 accessory hairs and with the three subbasal setæ measuring 77, 93, and 97 μ , respectively. *Abdomen* much like that of female, but with shorter setæ; middle pair of setæ at apex of segment IX not reduced in size, but subequal in length to others; tube about 0.81 as long as head, slightly more than three times as long as its greatest subbasal width, and nearly twice as broad near base as at apex, its terminal setæ about 224 μ .

Measurements of allotype (σ), in mm.: Length about 2.37 (fully distended, 2.98); head, length 0.364, greatest width (across eyes) 0.224, across cheeks 0.217, least width near base 0.169; eyes, length 0.118, width 0.075, interval 0.076; prothorax, length 0.171, width (inclusive of coxæ) 0.444; pterothorax, width 0.462; abdomen, width 0.420; tube, length 0.297, width near base 0.094, at apex 0.049.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	40 ²	68	127	120	114	100	76	42
Width (μ):	46	33	33	40	34	33	24	14
Total length of antenna 0.687 mm.								

Described from 8 females and 4 males, all from Barro Colorado Island, C. Z., Panama. Seven females and one male, including the holotype and allotype, were taken July 15, 1933, by the writer, on leaves of an aralia, *Nothopanax guilfoylei* (Cogn. & Marché) Merrill [Hood No. 983], while one female was found by Miss Sabra J. Hook among dead, fallen *Cecropia* leaves, June 28, 1933 [Hood No. 959].

The relative length and breadth of the head and the dark fourth antennal segment separate this species readily from all others known from the Neotropical realm, with the exception of *antennatus*, *bondari*, *anonæ*, and the two new species described below as *penetralis* and *avocadis*. From *antennatus* it differs most conspicuously in the sculpture of the metanotum, which in that species is composed of nearly equilateral polygons, not arranged in longitudinal rows in the posterior part of the sclerite; from *bondari* and *anonæ* it may be known by the length of the setæ on the anterior margin of the pronotum as well as by the longer sixth antennal segment; while from *penetralis* and *avocadis* it is readily distinguished by the short and broadly rounded mouth-cone.

² Dorsal length.

The plant upon which it occurs in abundance is commonly planted for ornament in tropical America, and is a common hedge in the Canal Zone. The origin of the plant is thought to be Polynesia or the East Indies, and I had expected to find the thrips a well-known or at least described species; yet it can not be identified with any known *Liothrips*, or with any of the numerous species of *Gynaikothrips*—a genus to which it could be assigned without violence to our definitions.

***Liothrips penetralis*, sp. nov.**

Female (macropterous).—Length about 2.4 mm. (distended, about 3.2 mm.). Color blackish brown or black, with tarsi, knees, and distal fourth of tube somewhat lighter; antennæ with segments I and II blackish brown, the distal portion of II yellowish, III yellow, lightly clouded apically, IV–VIII blackish brown, with apices of IV–VII and outer surface of distal portion of IV usually somewhat paler; fore wings dark brown in anal area or “scale” and with an equally dark median bar extending from base to near apex of wing, this bar broadest at base, involving the origins of the three subbasal setæ, and palest just beyond the subbasal setæ, the remainder of wing lightly clouded with brown, usually somewhat more darkly along posterior margin.

Head 1.48–1.59 times as long as wide (averaging 1.55), just perceptibly broader across cheeks behind posterior margin of eyes than across the latter, the cheeks slightly convex and converging to (rather than constricted) near base, where the width of the head is about 0.87 its greatest width, the cheeks then flared slightly outward at extreme base; vertex roundly produced, surpassing the base of the first antennal segment, polygonally subreticulate, the forwardly-directed median ocellus overhanging and with its anterior margin always distinctly in advance of front of head; dorsal and lateral surfaces of head cross-striate with anastomosing lines which produce a slight and irregular serration of the cheeks as seen from above; postocular setæ blackish brown, blunt or very slightly broadened at apex, usually about 124 μ (94–137 μ) long, about 140 μ apart, and 24 μ from posterior margin of eyes; other cephalic setæ minute. *Eyes* rounded, about 0.29 the length of head, not protruding, broadest behind ocelli, very slightly longer but not wider on ventral surface of head. *Ocelli* of posterior pair 23 μ in diameter and 38 μ apart, their posterior margin decidedly in advance of middle of eyes. *Antennæ* about 1.8 times as long as head, with the normal number and arrangement of sense-cones, the segments normal in form, III 110–124 μ in length (averaging 115 μ), VIII nearly pointed at tip, rather than rounded. *Mouth-cone* pointed at tip and very long, the distance between the posterior dorsal margin of head at median line and the tip of labrum 0.92–0.97 the median dorsal length of head.

Prothorax about 0.52 as long as head and (inclusive of coxæ) about 2.77 times as broad as long, its surface smooth excepting two or three long striæ near posterior margin and sometimes a small patch of shorter ones in front of each posterior marginal seta; all major setæ present, nearly black in color

and blunt at tip, distinctly variable in length; anterior marginal and anterior lateral pairs usually about 60 μ , midlaterals 70 μ , epimerals 133–154 μ , posterior marginals 154–182 μ , coxals about 55 μ ; inner seta on epimeron usually minute, though occasionally 37–45 μ . *Legs* normal. *Fore wings* normal, with 16–22 accessory setae, the three subbasal setae nearly black, blunt, in the holotype measuring respectively 80, 103, and 97 μ . *Metanotum* rather strongly and (in caustic-treated specimens) conspicuously subreticulate, the reticles as distinct in middle of sclerite as at sides, more or less elongated, and disposed rather generally in longitudinal rows.

Abdomen broadest at segments II or III, lightly subreticulate in median plate of tergum I, less distinctly sculptured in II and in successively smaller transverse areas at sides of III–VI, the lines in these latter areas scarcely asperate; setae (including those on IX) nearly black, the one or two dorso-lateral pairs on I–IV and VIII and the inner of these on V–VII, all blunt, the outer pair on V–VII and the three long subequal pairs on IX very nearly or quite pointed; inner (and outer) pairs measuring as follows (μ) in one of the paratypes: VI 162 (168), VII 156 (171), VIII 98 (106); on IX inner 280, middle 280, outer 252 μ ; tube about 0.83 as long as head, 2.7 times as long as its greatest subbasal width, and nearly twice as broad near base as at apex, its terminal setae about 210 μ .

Measurements of paratype (φ), in mm.: Length about 2.42 (distended, 3.17); head, length 0.322, width across eyes 0.204, greatest width across cheeks 0.207, least width near base 0.181; eyes, length 0.095, width 0.064, interval 0.079; prothorax, length 0.167, width (inclusive of coxae) 0.462; pterothorax, width 0.518; abdomen, width 0.525; tube, length 0.270, width near base 0.100, at apex 0.053.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	53 ³	63	110	90	83	71	67	40
Width (μ):	44	37	37	43	38	36	31	16
Total length of antenna 0.577 mm.								

Male (macropterous).—Length about 2.4 mm. (distended, 3.07 mm.). Color as in female; in structure departing from above description only as follows: *Head* 1.6–1.7 times as long as greatest width, which is usually across eyes; cheeks straight and converging to about their basal fourth, thence roundly converging to near base, where the width is 0.77–0.8 the greatest width, then broadened again at extreme base; median ocellus usually slightly surpassing front of head; postocular setae 98–120 μ long, 126–140 μ apart, and 26–35 μ from posterior margin of eyes; eyes almost always slightly protruding, distinctly longer and just wider on ventral surface of head; ocelli of posterior pair about 27 μ in diameter and 41 μ apart; antennal segment III 97–127 μ (averaging 113 μ); mouth-cone (measured as noted above) relatively much shorter than in female, usually 0.71–0.75 the median dorsal length of head, though rarely only 0.66 as long. *Prothorax* with anterior marginal and anterior lateral setae short, usually 50–55 μ , midlaterals about 77 μ , epimerals 101–133 μ , posterior marginals

³ Ventral length.

73–115 μ ; fore wings with 11–20 accessory setæ. *Abdomen* with inner (and outer) pairs of setæ measuring as follows in one paratype (μ): VI 141 (140), VII 138 (143), VIII 97 (100); on IX all three pairs subequal, 294–308 μ , all dark in color as in female; tube about 0.8 as long as head, three times as long as greatest subbasal width, scarcely twice as wide near base as at apex, its terminal setæ about 217 μ .

Measurements of paratype (σ), in mm.: Length about 2.39 (distended, 3.07); head, length 0.356, width across eyes 0.211, greatest width across cheeks 0.204, least width near base 0.162; eyes, length 0.100, width 0.067, interval 0.077; prothorax, length 0.154, width (inclusive of coxæ) 0.445; pterothorax, width 0.448; abdomen, width 0.434; tube, length 0.280, width near base 0.093, near apex 0.048.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	55 ⁴	65	114	97	90	80	69	48
Width (μ):	43	36	35	40	37	33	28	16

Total length of antenna 0.618 mm.

Described from 9 females and 7 males, all taken by the writer on Barro Colorado Island, C. Z., Panama, August 6–14, 1933, among young terminal leaves of a plant which Dr. Paul C. Standley believes is probably a species of *Trichilia*.

The very long mouth-cone of the female permits the immediate recognition of this species. *L. bondari* has much shorter, *anonæ* much longer, prothoracic setæ; *zeteki* has the head proportionately shorter; *antennatus* has much longer antennal segments. The closest relative of *penetralis*, however, is the species described immediately below as *avocadis*, and I doubt whether proper separation could be made in poorly mounted material. The present species differs constantly in the much longer mouth-cone, somewhat shorter head, smaller ocelli, color of the fore wings and abdominal setæ, and sculpture of the metanotum.

Liothrips avocadis, sp. nov.

Female (macropterous).—Length about 2.5 mm. (distended, 3.2 mm.). Color blackish brown or black, with tarsi, knees, and distal third of tube somewhat lighter; antennæ with segments I and II blackish brown, the distal portion of II yellowish brown, III yellow, IV–VIII blackish brown, with apical portion of IV, especially on outer surface, paler and mottled with yellowish; fore wings brown in anal area or “scale” and with an equally dark median bar from base to near apex of wing, this bar not broadened at base and separated from the origins of the three subbasal setæ by a pale area which is continued along wing close to front margin, the remainder of wing lightly clouded with brown and with a dark area along posterior margin.

Head 1.58–1.67 times as long as wide (averaging 1.63), just perceptibly broader across cheeks behind posterior margin of eyes than across the latter, the cheeks very slightly convex and converging to near base (rather

⁴ Ventral length.

than constricted), the least width of the head at this point 0.80–0.85 its greatest width, the cheeks then flared slightly outward at extreme base; vertex roundly produced, slightly surpassing the base of the first antennal segment, polygonally subreticulate, the forwardly-directed median ocellus overhanging and with its anterior margin always distinctly in advance of front of head; dorsal and lateral surfaces of head cross-striate with anastomosing lines which produce a slight and irregular serration of the cheeks as seen from above; postocular setæ blackish brown, blunt or very slightly broadened at apex, usually about 120 μ long, about 153 μ apart, and 30 μ from posterior margin of eyes; other cephalic setæ minute. *Eyes* about 0.3 the length of head, not protruding, broadest behind ocelli, very slightly longer and wider on ventral surface of head. *Ocelli* of posterior pair 30 μ in diameter and 37 μ apart, their posterior margin decidedly in advance of middle of eyes. *Antennæ* about 1.75 times as long as head, with the normal number and arrangement of sense-cones, the segments normal in form, III 103–115 μ in length (averaging 109 μ), VIII nearly pointed at tip, rather than rounded. *Mouth-cone* pointed at tip and long, the distance between the posterior dorsal margin of head at median line and the tip of labrum 0.79–0.87 the median dorsal length of head (averaging 0.825).

Prothorax about 0.47 as long as head and (inclusive of coxæ) about 2.9 times as broad as long, its surface smooth excepting for a few long striæ near posterior margin and usually a small patch of shorter ones in front of each posterior marginal seta; all major setæ present, nearly black in color and blunt at tip, variable in length, measuring as follows in one paratype: anterior marginals 60 μ , anterior laterals 55 μ , midlaterals 92 μ , epimerals 147 μ , posterior marginals 150 μ , coxals 58 μ ; inner seta on epimeron usually minute, very rarely 30–77 μ . *Legs* normal. *Fore wings* normal, with 15–20 accessory setæ (averaging 17), the three subbasal setæ nearly black, blunt, and variable in length, in the holotype measuring respectively 73–77, 100–101, and 105–112 μ on the two wings. *Metanotum* almost perfectly smooth medially between the pair of major setæ, rather lightly subreticulate elsewhere, the reticles more or less elongated and disposed in fairly regular longitudinal rows.

Abdomen broadest at segment III, lightly subreticulate in median plate of tergum I, less distinctly sculptured in II and in successively smaller transverse areas at sides of III–VI, the lines in these latter areas scarcely asperate; setæ at apex of segment IX pale and pointed, the dorsal pair of these white, the other two pairs yellowish, all other abdominal setæ blackish brown to black and, excepting the terminal ones, blunt at tip; inner (and outer) pairs measuring as follows in one of the paratypes (μ): VI 182 (156), VII 163 (190), VIII 103 (127); on IX, inner 266, middle 294, outer 266; tube about 0.78 as long as head, 2.8 times as long as its greatest subbasal width, and nearly twice as broad near base as at apex, its terminal setæ about 245 μ .

Measurements of paratype (♀) in mm.: Length about 2.48 (distended, 3.22); head, length 0.361, width across cheeks 0.223, across eyes 0.213, least width near base 0.181; eyes, length 0.107, width 0.067, interval 0.080; prothorax, length 0.169, width (inclusive of coxæ) 0.490; pterothorax, width

0.518; abdomen, width 0.554; tube, length 0.280, width at base 0.100, at apex 0.053.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	60 ⁵	72	110	100	95	79	72	43
Width (μ):	46	40	36	42	38	37	30	17
Total length of antenna 0.631 mm.								

Male (macropterous).—Length about 2.1 mm. (distended, about 2.5 mm.). Color as in female; in structure departing from above description only as follows: *Head* 1.65–1.76 times as long as greatest width, which is usually behind eyes, its least subbasal width 0.75–0.8 its greatest width (averaging 0.78); postocular setæ shorter, usually about 103 μ long (90–110), 133 μ apart (131–135), and 23 μ from posterior margin of eyes; ocelli about 24 μ in diameter and 32 μ apart; antennæ about 1.7 times as long as head, segment III 91–109 μ (averaging 99 μ); mouth-cone 0.69–0.72 as long as head (when measured as described above). Prothorax about 0.42 as long as head; setæ shorter than in female, measuring as follows in one specimen: anterior marginals 57 μ , anterior laterals 43 μ , midlaterals 64 μ , epimerals 103 μ , posterior marginals 113 μ ; fore wings with 14–17 (usually 15) accessory setæ, the subbasal setæ in one paratype measuring 69, 83 and 91 μ , respectively. *Abdomen* broadest at segment II; setæ at apex of segment IX pale as in female, all three pairs subequal in length (252–280 μ); inner (and outer) setæ measuring as follows in one paratype (μ): VI 133 (158), VII 130 (151), VIII 94 (105); terminal setæ about 203 μ .

Measurements of paratype (σ^7), in mm.: Length about 2.11 (distended, 2.45); head, length 0.332, width across cheeks 0.199, across eyes 0.196, near base 0.153; eyes, length 0.098, width 0.064, interval 0.068; prothorax, length 0.141, width (inclusive of coxæ) 0.392; pterothorax, width 0.420; abdomen, width 0.400; tube, length 0.255, width at base 0.089, at apex 0.047.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	48 ⁶	63	96	91	86	76	65	38
Width (μ):	40	36	32	38	34	32	26	15
Total length of antenna 0.563.								

Described from 16 females and 7 males, taken by Mr. James Zetek at Ancon, Canal Zone, Panama, August 24, 1933, on avocado (*Persea americana* Mill.) [Hood No. 1064].

This species differs from its described congeners in the same ways as *penetratis*, described above; and its separation from that species has been adequately treated.

Liothrips cordiæ, sp. nov.

Female (macropterous).—Length about 2 mm. (partially distended, 2.5 mm.). Color blackish brown or black, with tarsi and distal fourth of tube somewhat lighter; antennæ with segments I and II blackish brown, the

⁵ Ventral length.

⁶ Ventral length.

distal portion of II yellowish brown, III yellow and lightly shaded across apex, IV–VIII nearly black, with outer distal portion of IV mottled with brown; fore wings dark brown across base,—this area extending to the third subbasal seta and including the anal area (“scale”),—and with a dark median bar extending to near tip of wing, this bar paler than, and not distinctly connected with, the basal area, posterior margin of wing with a much narrower dark band which anteriorly is edged with darker and separated from the dark median bar by a nearly colorless interval, the costal portion of wing light brownish.

Head about 1.32 times as long as wide in holotype, distinctly broader across anterior portion of cheeks than across eyes; cheeks convex, slightly rounded to eyes, more strongly rounded to near base, and flared outward at extreme base, the least subbasal width of head about 0.82 the greatest width; vertex roundly produced, slightly surpassing the base of the first antennal segment, polygonally subreticulate, the forwardly directed median ocellus overhanging and with its anterior margin distinctly in advance of front of head when the latter is perfectly horizontal; remainder of dorsal and lateral surfaces of head cross-striate with anastomosing lines which produce a distinct serration of the cheeks as seen from above; postocular setæ nearly black, blunt but nearly pointed, 70–87 μ long, about 134 μ apart, and about 25 μ from posterior margin of eyes; other cephalic setæ minute. *Eyes* not protruding, slightly more than one-third the length of head, broadest just behind ocelli, somewhat longer and narrower on ventral surface of head. *Ocelli* of posterior pair 26 μ in diameter and 32 μ apart, their posterior margin decidedly in advance of middle of eyes. *Antennæ* about 1.84 times as long as head, with the normal number and arrangement of sense-cones, the segments normal in form, III 77–88 μ (averaging 81 μ , holotype 81 μ). *Mouth-cone* pointed at tip, the distance between posterior dorsal margin of head at median line and the tip of labrum about 0.8 the median dorsal length of head.

Prothorax about 0.5 the length of head and (inclusive of coxæ) about 2.9 times as broad as long, its surface smooth excepting the cross-striate posterior margin and a small patch of striæ in front of each posterior marginal seta; all major setæ present, nearly black in color and scarcely pointed at tip, measuring as follows in one paratype: anterior marginals and anterior laterals 31 μ , midlaterals 30 μ , epimerals 100 μ , posterior marginals 80 μ , coxals 33 μ ; inner seta on epimeron minute. *Legs* normal. *Fore wings* normal, with 12–15 accessory setæ (averaging 13), the three subbasal setæ nearly black, scarcely pointed, and variable in length, in the holotype measuring 55, 70, and 69 μ , respectively. *Metanotum* much less weakly sculptured medially between the pair of major setæ than elsewhere, the remainder subreticulate, the reticles more or less elongated and disposed in fairly regular longitudinal rows.

Abdomen broadest at segment IV, lightly subreticulate in median plate of tergum I, cross-striate with anastomosing lines at sides of the more basal segments and across base of II; all setæ nearly black, excepting those at apex of IX, which are brownish yellow, the terminal setæ, those on IX, and usually the lateral pair on VII pointed, the others blunt; inner (and outer)

pairs measuring as follows in one paratype: VI 127 (126), VII 163 (167), VIII 67 (100); on IX, inner 176, middle 178, outer 206; tube about 0.84 as long as head, 2.6 times as long as its greatest subbasal width, and twice as broad near base as at apex, its terminal setæ about 196 μ .

Measurements of paratype (φ), in mm.: Length about 2.02 (distended 2.48); head, length 0.270, greatest width (across cheeks) 0.205, across eyes 0.192, least width near base 0.167; eyes length 0.092, width 0.059, interval 0.075; prothorax, length 0.137, width (inclusive of coxæ) 0.399; pterothorax, width 0.420; abdomen, width 0.480; tube, length 0.228, width near base 0.087, at apex 0.043.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	51 ⁷	62	78	77	72	68	56	32
Width (μ):	41	33	30	38	33	32	26	14
Total length of antenna 0.496 mm.								

Male (macropterous).—Length about 1.6 mm. (distended, 2.0 mm.). Color as in female; in structure departing from above description only as follows: Postocular setæ 43–60 μ , about 117 μ apart, and about 17 μ from posterior margin of eyes; ocelli of posterior pair 23 μ in diameter and 26 μ apart; antennal segment III 74–77 μ ; mouth-cone (measured as described above) 0.61–0.70 as long as head; prothoracic setæ measuring as follows in one paratype (μ): anterior marginals 21, anterior laterals 29, midlaterals 38, epimerals 75, posterior marginals 70, coxals 30; fore wings with 9–14 (averaging 11.5) accessory setæ, the subbasal setæ measuring in one paratype 50, 48, and 50 μ , respectively; abdominal segment IX with inner pair of setæ dark brown and about 176 μ , middle pair dark brown and only 40 μ , outer pair pale yellowish and about 216 μ ; inner (and outer) setæ measuring as follows: VI 104 (77), VII 120 (130), VIII 58 (87); terminal setæ about 170 μ .

Measurements of paratype (σ), in mm.: Length about 1.61 (distended, 2.03); head, length 0.245, greatest width (across cheeks) 0.179, across eyes 0.174, least width near base 0.145; eyes, length 0.087, width 0.056, interval 0.063; prothorax, length 0.117, width (inclusive of coxæ) 0.338; pterothorax, width 0.358; abdomen, width 0.360; tube, length 0.203, width at base 0.076, at apex 0.037.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	45 ⁸	54	77	71	67	62	50	30
Width (μ):	38	30	27	36	32	31	24	13
Total length of antenna 0.456 mm.								

Described from 14 females and 5 males, all from Barro Colorado Island, C. Z., Panama, taken July 30, 1933, on leaves of *Cordia nitida* Jacq. (det. by Dr. Paul C. Standley), J. D. H. [Hood No. 1026], *holotype*, *allotype*, and *paratypes*; and also in October, 1933, on leaves of *Casearia sylvestris* Swartz (det. by Standley), Silvestre Aviles [Hood No. 1086], *paratypes*.

⁷ Ventral length.

⁸ Ventral length.

The short head and antennal coloration place this in a group containing the Neotropical species *brasiliensis*, *zeteki*, *obscuricornis*, and *varicornis*. From the first it may be distinguished by the coloration of the fore wings and the shorter third antennal segment; from the next by the shorter head and shorter third antennal segment; from *obscuricornis* (hereby raised from varietal to full specific rank) by the much stouter fourth antennal segment; and from *varicornis* by the longer head, minute inner seta on the prothoracic epimeron, and the nearly black lateral abdominal setae.

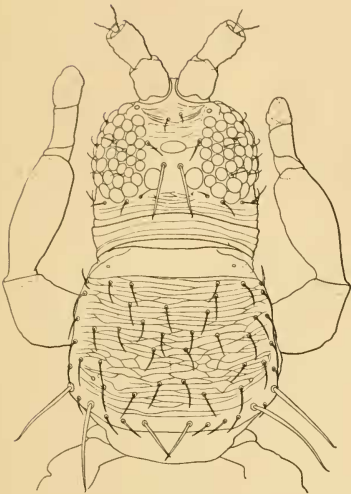
***Zeugmatothrips priesneri*, sp. nov.**

(Pl. IV, figs. 3-5.)

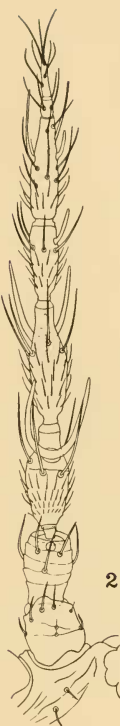
Female (macropterous).—Length about 2.4 mm. (fully distended, about 2.66 mm.). *Color* of head blackish brown, thorax and first two abdominal segments very much paler and yellowish brown in color, the prothorax shading to blackish brown in anterior angles and apices of the tubercles which bear the three pairs of lateral setae, the pterothorax with all pleural plates blackish brown, the first abdominal segment with stigmatal plates blackish brown, sternum of second segment much darker than its tergum, abdominal segments III-X nearly or quite black; all coxae brown, fore and hind femora white excepting the slightly brownish bases of the hind pair; middle femora white in about distal two-fifths and brown in remainder, basal portion and trochanters paler; fore tibiae yellow, or brownish yellow, more or less clouded with brown, extreme bases white; middle and hind tibiae white at base, brown beyond, distinctly yellowish at tip, the hind pair much darker; tarsi brownish yellow with black cups; antennae about concolorous with head in segments I and II, the base of I and median distal portion of II paler, III with the very brief basal portion of pedicel yellowish and remainder of basal half dark brown, distal half yellow, IV-VII dark yellow, excepting the brownish distal fourth of VII, VIII dark gray-brown; wings pale yellowish brown, more or less darkened with gray along anterior margin, each with a yellowish brown median vein; internal (fat-body) pigmentation (evident in fresh or living material, especially if teneral; often not distinct in older specimens; usually distinct under reflected light) consisting of white and red, the former disposed as a thin, discontinuous layer just beneath the cuticula in the pale fore femora, in the pale apical portions of the middle and hind femora, in the dorsum of the metathorax, and at the sides of the second abdominal segment, the red pigmentation more sparse and disposed in head, thorax, sides of abdomen (excepting segment II) and bases of middle femora.

Head (Fig. 3) fully 1.5 times as long as greatest width, which is either across eyes or across cheeks just behind eyes, the cheeks narrowed at distal third, widened again behind middle, and narrowed again toward base; surface lightly but distinctly subreticulate, its reticles finely wrinkled; postocular setae long (117 μ) and knobbed, situated close to inner margins of eyes and on a line with their posterior margins, about 58 μ apart; *occipital setae* similar in form, about 110 μ long, 42 μ apart, and about 37 μ from postoculars, both pairs arising from low tubercles; genal setae disposed in two pairs, both very pale, slender, dilated at tip, and about 23 μ long. *Eyes*

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(See attached paper on THESAUOPTIDA
by HOOD)



1



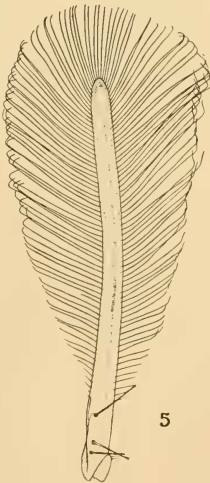
2



4



3



5

somewhat flattened, with three enlarged facets at outer posterior angles, their length less than one-third that of head, their width less than their interval. *Ocelli* equidistant, small, the posterior pair about $17\ \mu$ in diameter and $31\ \mu$ apart, the median one directed nearly forward and on a line with bases of antennæ. *Antennæ* (Fig. 4) about 2.1 times as long as head, their form and chaetotaxy well shown in figure; segment I with the long ($117\ \mu$), knobbed seta arising from a distinct, subapical, dorsal tubercle; *III-V* each with a similar though slenderer dorsal seta arising from a prominent, dark base, that on *III* about $87\ \mu$, that on *IV* about $80\ \mu$, and the one on *V* about $113\ \mu$ long. *Mouth-cone* broadly rounded, surpassing middle of prosternum.

Prothorax (Pl. IV, fig. 3) about 0.45 as long as head and (inclusive of coxæ) about 2.5 times as wide as long, its surface with a few faint reticles, its five pairs of knobbed major setæ borne on tubercles, its epimeron partially fused with pronotum; *anterior marginal setæ* ($105\ \mu$) *nearly as long as postoculars*, anterior laterals $126\ \mu$, midlaterals $137\ \mu$, epimerals $130\ \mu$, posterior marginals $120\ \mu$ (in holotype). *Legs* normal to the genus; fore femora each with four strong, knobbed setæ, middle and hind femora each with three, tibiæ each with one; fore coxæ without major setæ; fore tarsi unarmed. *Wings* of both pairs long, narrow, of equal width throughout, and with a strong, median vein extending nearly to tip; fore pair (Pl. IV, fig. 5) with three subbasal setæ about equal in length to anterior marginals and similarly knobbed, accessory setæ of hind margin absent. *Mesothorax* much narrower than metathorax, the latter much swollen at sides; metanotum with a single pair of prominent, stout, knobbed setæ, $137\ \mu$ long in holotype, with their centers $59\ \mu$ apart; metepimeron with a similar seta about equal in length to those on femora.

Abdomen broadest at segment III, where it is about 1.06 times the width of metathorax, thence tapering to tube; terga VI-IX rather heavily reticulate (this visible in teneral specimens or by reflected light); all tergal setæ long, heavy, and knobbed, the inner pair on II about 170 μ , middle pair on VII about 133 μ , dorsal pair on IX about 140 μ , longest terminal setæ on tube pointed, about 165 μ ; wing-retaining setæ sigmoid, pointed, one pair only on terga II-VII. *Tube* about 1.8 times as long as head, less than six times as long as greatest width, more than twice as broad near base as at apex, its surface with numerous clothing hairs, the longest of these equal to greatest width of tube; apex of tube slightly constricted.

Measurements of ♀ (holotype), in mm.: Length about 2.44 (partially distended, 2.63); head, length 0.297, width across eyes 0.195, greatest width across cheeks 0.193, least width (near base) 0.168; eyes, length 0.081, width 0.060; interval 0.075; prothorax, median length of pronotum 0.134, width inclusive of coxæ 0.336; metathorax, greatest width 0.419; abdomen, width at segment III 0.445; tube, length 0.548, width near base 0.097, width at apex 0.046.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	53	57	90	104	110	77	62	70
Width (μ):	46	35	30	31	32	29	26	18
Total length of antenna 0.623 mm.								

Male (macropterous).—Length about 2.0 mm. (partially distended, 2.2 mm.). Color and structure essentially as in female, the cephalic, antennal, and pronotal setæ as in that sex.

Measurements of ♂ (allotype), in mm.: Head, length 0.269, width across eyes 0.168, greatest width across cheeks 0.166, least width (near base) 0.146; eyes, length 0.077, width 0.051, interval 0.066; postocular setæ 0.110; occipital setæ 0.104; prothorax, median length of pronotum 0.117, width (inclusive of coxæ) 0.280; anterior marginal setæ 0.089, anterior laterals 0.103, midlaterals 0.116, epimerals 0.109, posterior marginals 0.110; metathorax, greatest width 0.342; abdomen, greatest width 0.346; tube, length 0.434, width near base 0.080, width at apex 0.042.

Antennal segments:	1	2	3	4	5	6	7	8
Length (μ):	51	53	80	91	97	67	56	61
Width (μ):	43	32	27	28	29	28	25	18
Total length of antenna 0.556.								

Larva, Instar I.—Length about 1.3 mm. *Color* cream-yellow, with a bright crimson internal band along sides of pro-, meso-, and metathorax, this band extending across dorsum of first abdominal segment and continued forward along median line of metathorax; abdomen with a similarly colored band along sides of segments III–IX, successively broader (especially posteriorly) in III–V, in V involving the whole posterior dorsal portion of segment; legs, antennæ, and last two abdominal segments light gray, the antennæ with segment I paler and II somewhat darker than the others. *Head* with one pair of large, curved setæ, these about 90 μ in length, knobbed, dark in color, arising from low tubercles situated between eyes and close to their inner margins; antennæ with a tubercle on dorsum of segment III near apex from which arises a very long (207 μ), dark, finely pointed seta that extends nearly to tip of antenna; segment III about 64 μ long, IV 52 μ ; mouth-cone long, heavy, semicircularly rounded at tip, and extending onto mesosternum. *Prothorax* with two pairs of long, dark, knobbed setæ, one of them stouter, situated near middle of dorsum, and 98 μ long, with its bases 43 μ apart and set in distinct tubercles, the more slender pair dorso-lateral in position, 152 μ apart, not set in tubercles, and 85 μ long; meso- and metathorax each with a transverse row of four tubercles from which arise knobbed setæ, of which the dorsal mesothoracic pair are 82 μ long and 59 μ apart, the lateral mesothoracic 127 μ long and 160 μ apart, the dorsal metathoracic 83 μ long and 61 μ apart, and the lateral metathoracic 141 μ long and 171 μ apart. *Abdomen* with a transverse row of four subequal, stout, knobbed setæ on dorsum of segments II–VIII, all arising from low tubercles, the lateral pair on VII about 72 μ long; lateral surfaces of II–VIII each with a slender, pointed seta; IX with a pair of dorsal, knobbed setæ (96 μ) and two pairs of much shorter, pointed ones; segment X 97 μ long; XI with the two long setæ about 750 μ in length.

Larva, Instar II.—Length about 1.74 mm. *Color* almost as in first instar (the distribution of the crimson internal pigmentation nearly identical), but with the basal portions of antennal segments II–IV shaded with darker and abdominal segments IX and X largely dark blackish brown, IX shading